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CLAIMS

What is claimed is:

1. A method of manufacturing a luminescent screen assembly for a color
5 cathode-ray tube (CRT), comprising the steps:

screening an inner surface of a faceplate panel, thereby providing on the
inner surface a screened surface having phosphor deposits and organic materials,
the organic materials having at least two components with different thermal
decomposition characteristics, at least some of the organic materials overlie the
10 phosphor deposits;

depositing a metal layer on the organic materials; and,

removing the organic materials from the inner surface of the faceplate
panel by volatilizing the organic materials through heating such that volume rates of
gaseous decomposition products from each of the components is less than diffusion
15 rates of the respective gaseous decomposition products through the metal layer.

2. The method of claim 1 wherein the organic materials applied to the surface of
faceplate panel have a composite screen weight of greater than about 1.0 mg/cm².

3. The method of claim 1 wherein the volume rate of the gaseous decomposition
products produced is controlled by adjusting rates of temperature increase.
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4. The method of claim 3 wherein more than one rate of temperature increase is
used to control separately the volume rates of the gaseous decomposition products
25 produced.

5. A method of manufacturing a luminescent screen assembly for a color
cathode-ray tube (CRT), comprising the steps:

providing a luminescent screen assembly, wherein the luminescent
30 screen assembly includes a metal layer formed on organic materials applied to the
surface of a faceplate panel of the tube;

heating the assembly to a temperature to diffuse a portion of the organic
materials through the metal layer during a screenbake step, and subsequently
heating the assembly to a temperature to diffuse remaining organic materials through

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the metal layer during a frit curing step wherein diffusion rates of the organic materials through the metal layer is greater than the volume rate of gaseous decomposition products of the organic materials formed during heating steps.

- 5 6. The method of claim 5 wherein an oxygen source is provided during the frit curing step.
7. The method of claim 5 wherein the organic materials include an oxidizer.
- 10 8. The method of claim 7 wherein the oxidizer is sodium perchlorate, potassium perchlorate, sodium chlorate, potassium chlorate, sodium nitrate, or potassium nitrate.
- 15 9. The method of claim 7 wherein the organic materials are volatilized at a rate of less than about 1.10 wt. %/min during the screenbake step.
10. The method of claim 7 wherein the organic materials are volatilized at a rate of less than about 2.5 wt. %/min during the frit curing step.
- 20 11. A method of manufacturing a luminescent screen assembly for a color cathode-ray tube (CRT), comprising the steps:
 - providing a luminescent screen assembly to the inner surface of a faceplate panel, wherein the luminescent screen assembly includes a metal layer formed on organic materials applied to the surface thereof, the organic materials
 - 25 having at least two components with different thermal decomposition characteristics;
 - exposing the luminescent screen assembly to a first temperature rate increase that ends at a first temperature at which a first component begins to volatilize;
 - exposing the luminescent screen assembly to a second temperature rate
 - 30 increase that starts at the first temperature and ends at a second temperature to volatilize the first component;
 - exposing the luminescent screen assembly to a third temperature rate increase that starts at the second temperature and ends at a third temperature to volatilize a second component; and

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exposing the luminescent screen to any additional temperature rates increases to volatilize any additional components, thereby removing the organic materials from the screen such that the screen assembly can be processed into the CRT and wherein each of the temperature rate increases creates gaseous decomposition products at volume rates that are less than respective diffusion rates of the respective gaseous decomposition products.

12. The method of claim 11 wherein:

the first temperature rate increase is up to an average value of $9.0^{\circ}\text{C}/\text{min}$ for at least 22.4 min, the first temperature rate ends at about 225°C and begins to volatilize the first component;

the second temperature rate increase is up to an average value of $1.0^{\circ}\text{C}/\text{min}$ for at least 15 min, the second temperature rate increase starts at about 225°C and ends at a about 240°C to volatilize the first component;

the third temperature rate increase is up to an average value of $0.75^{\circ}\text{C}/\text{min}$ for at least 80 min, the third temperature rate increase starts at about 240°C and ends at about 300°C to volatilize the second component; and

additional temperature rate increases are incorporated in additional steps of:

exposing the luminescent screen assembly to a fourth temperature rate increase is up to an average value of $2.0^{\circ}\text{C}/\text{min}$ for at least 25 min, the fourth temperature rate increase starts at about 300°C and ends at about 350°C to volatilize a third component; and

exposing the luminescent screen assembly to a fifth temperature rate increase is up to an average value of $9.0^{\circ}\text{C}/\text{min}$ for at least 12.2 min, the fifth temperature rate increase starts at about 350°C and ends at about 460°C to volatilize a fourth component.

13. The method of claim 12 wherein the first component comprises ammonium oxalate monohydrate (AOM) and polymethylmethacrylate (PMMA).

14. The method of claim 12 wherein the second component comprises ammonium oxalate monohydrate (AOM), polymethylmethacrylate (PMMA) and poly(2-hydroxyethyl methacrylate) (PHEM).

15. The method of claim 12 wherein the third component comprises polystyrene (PS), polymethylmethacrylate (PMMA) and poly(2-hydroxyethyl methacrylate) (PHEM).

5 16. The method of claim 12 wherein the fourth component comprises polystyrene (PS) and poly(2-hydroxyethyl methacrylate) (PHEM).

FOOTER ET 583660